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ABSTRACT

To determine the dominant ecosystem types in nonmetropolitan counties and the role of ecological factors in determination of levels of total and age-specific migration patterns within nonmetropolitan areas and ecosystem types for 1950-60 and 1960-70, 30 ecological variables representing POET concepts of population, organization, environment, and technology were used in analyses. Data were classified for the two time periods by age (persons 25-29 and 20-29) and various ecosystem types (for example, small city or suburban manufacturing and trade centers; large, low density mining and manufacturing centers; basic agriculture; rural service centers). Results indicated that a wider range of ecological variables influenced migration patterns over time; effects of ecological factors on migration were significant at both points in time; ecosystem subgrouping increased ability to understand migration patterns; ecological effects were not age specific; variables with direct relationships to total rates showed inverse relationships to age-specific rates; and importance of economic organization indicators decreased while environmental factors increased. Delineation of ecosystems first in examining ecological patterns was supported by the significantly greater percent of variation explained in ecosystems than in the total nonmetropolitan population migration rates, and by variations in types of variables that were significant in different ecosystems. (RS)

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ECOLOGICAL FACTORS IN MIGRATION IN NONMETROPOLITAN COUNTIES, 1950-1970

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Ecological Factors in Migration in Nonmetropolitan Counties, 1950-1970

Introduction

The human ecological perspective has long been used as an explanatory framework for examining demographic phenomena. Patterns of population concentration (Duncan et al., 1960; Hawley, 1950; Berry and Horton, 1970), fertility (Beckham, 1969), population change (Frisbie and Poston, 1976; Frisbie and Poston, 1975), and particularly migration (Sly, 1972; Sly and Tayman, 1977; Karp and Kelly, 1971) have all been examined from an ecological perspective.

Among the most significant of the recent efforts to employ the ecological perspective have been those that have examined sustenance maintenance (Gibbs and Martin, 1959) affects on population change (Frisbie and Poston, 1975, 1976) and ecological complex conceptions (Duncan and Schnore, 1959; Hauser and Duncan, 1959) and their affects on rates of net migration (Sly, 1972; Sly and Tayman, 1977). These efforts have been both empirically and theoretically important. Empirically, they have provided some of the first attempts to operationalize the elements of the ecological complex (the POET) variables) (Sly, 1972; Sly and Tayman, 1977) and to ascertain recent empirically substantiated sustenance organizational groupings of nonmetropolitan counties (Frisbie and Poston, 1975, 1976). Theoretically, they have tended to clarify the central role of ecological organization in the determination of demographic patterns (Sly, 1972; Poston and Frisbie, 1975). Such efforts, then, have provided valuable insights concerning the methodological and conceptual distinctions that are necessary for examining the effects of ecological factors on demographic phenomena.

Analysis such as those described above, however, provide but an initial step toward the systematic examination of the role of ecological processes in

determining demographic patterns. Many other aspects of the ecological framework require examination. Thus it is evident that because the work by Frisbie and Poston utilizes the sustenance maintenance conception of ecology while Sly's uses the more inclusive ecological complex approach and because Frisbie and Poston's concentrates on total nonmetropolitan patterns of population change for 1960-1970 while Sly's examines migration for selected nonmetropolitan areas from 1950-1960 (1972) and migration for major metropolitan areas for 1960-1970 (1977), neither provides an analysis which allows one to compare the two quite diverse ecological approaches in terms of their utility for examining a given demographic phenomena over time. Without such analyses the relative significance of their diverse conceptions of ecology cannot be ascertained.

In addition, like many other attempts at ecological analyses of demographic factors, these give little attention to either the possible selective effects of ecological factors or to the potentially significant effects of ecosystem differences. Thus, most analyses of ecological effects have examined total population rates and relatively few attempts have been made to examine the effects of ecological factors on age-specific rates.

In the analysis of population factors the neglect of age-specific analyses would appear to be especially problematic. Age directly affects adaptation by limiting adaptive abilities and indirectly through its strong direct relationship to increasing levels of geographic attachment. Migration, for example, is widely acknowledged as being age selective (Bogue, 1969; Peterson, 1975) and its age specificity is well documented (Bowles et al., 1975). Population adaptation, of which migration is one manifestation (Hawley, 1950), does not occur uniformly among all members of the population. Rather, population adaptation tends to be somatic in nature (Hawley, 1950), with those with

the greatest degree of plasticity being the most likely to show adaptive changes. As Hawley notes, for factors such as migration, these groups consist of "Young adults, who comprise the more vigorous, self-reliant and adaptable segment of population..." (1950: 340). The importance of the analysis of age-specific factors and particularly age-specific rates for young adults when examining migration is apparent.

The neglect of ecosystem differences appears equally limiting. Inherent in the ecosystem concept is the multilinear view of change and the view that the unique characteristics of an ecosystem will lead to different processes within different ecosystems (Duncan, 1964). Such a view would clearly suggest the need to establish distinct ecosystem types (as was done by Frisbie and Poston, 1975) and to analyze the patterns of demographic phenomena within ecosystem types. Finally, because the key process of change in such ecoysstems is one of expansion (Hawley, 1950; Duncan, 1964), it would appear essential to examine such patterns at multiple points in time, both to provide a better understanding of the explanatory effect of ecological variables across time and to ascertain the types of changes that have occurred in the major ecosystems over time.

In sum, then, analyses that utilize a wide range of ecological indicators of both the sustenance maintenace and ecological complex conceptions of ecology, that examine total population and age-specific patterns of a given demographic phenomena within ecosystem types and for multiple time periods are essential. Such analyses clearly provide a more complete explanation of the role of ecological factors in determining demographic patterns.

The present paper describes the results of an ongoing attempt to determine the dominant ecosystem types in nonmetropolitan counties and the role of ecological factors in the determination of levels of total and age-specific

migration patterns within nonmetropolitan areas and ecosystem types for both 1950-1960 and 1960-1970. In accordance with the distinctions noted above, the analysis proceeded in two parts. The first part presents the results of an attempt to delineate dominant ecosystem types in 1950 and 1960 and changes in these types between 1950 and 1960. The second part presents the results of an attempt to examine the effects of ecological factors on migration patterns within ecosystem types. The total analysis thus provides an assessment of several key ecological concepts and an analysis of the role of ecological factors in the determination of human migration patterns.

Methodology

In order to perform the above analysis two general sets of procedures and processes were performed. In order to determine ecosystem types ecological variables representing each of the P ET concepts were chosen. Population variables were selected that represented standard demographic measures.[1] Technological variables were chosen to represent mechanical technology. Environmental variables were chosen to represent relatively fixed conditions that affect or potentially affect demographic phenomena (Hawley, 1950) and the organizational variables chosen were selected on the basis of their representation of interdependent industrial (Frisbie and Poston, 1975, 1976) and money related activities (Sly, 1972). These items were limited to those available for both 1950 and 1960 and were collected from data sets from the 1952, 1956, 1962, 1966, and 1972 City-County Data Book[2] for all nonmetropolitan counties as defined in 1972 (Brown and Hines, 1975). The items so selected and computed are shown by POET concept in Table 1.

This initial set of variables was then reduced to a more manageable number by examining the correlations between variables. When similar indicators of the same POET concept correlated 0.5 or more with each other, the variable

which was felt to be the most descriptive indicator of the concept was included and all other eliminated. This process reduced the list of indicators to those shown in Tables 2-6. All subsequent analyses utilized these variables.

In order to further determine ecosystem types the 30 variables selected for 1950 and 1960 were subjected to factor analysis with an obligue promax rotation technique being employed and with eigen values of 1.00 being used for factor determination (Barr et al., 1976). On the basis of this factor analysis, factor scores were obtained for each nonmetropolitan county for each factor for 1950 and 1960. At each period counties were then assigned to the ecosystem (factor) grouping for which they had the highest factor score. Thus each county was assigned to one of eight factor groups in 1950 and to one of nine factor groups in 1960. These ecosystem groupings were examined for dominant characteristics and patterns of change from 1950 to 1960 and were utilized as the subgroupings for the subsequent regression analysis.

The final part of the analysis consisted of an examination of the ability of the ecological complex factors to explain total migration patterns and patterns for two age-specific groups for 1950-1960 and 1960-1970. Migration rates were computed from Bowles et al. (1965, 1975). The specific factors utilized as dependent variables were the total net migration rate for each county and the age-specific rates for young adults 20-29 years of age and 25-29 years of age for 1950-1960 and 1960-1970. The choice of these two groups was dictated by the fact that the first group contains the range of ages generally found to be most mobile, while the latter age group allows one to examine post college patterns of mobility.

Stepwise regression analysis of the effects of the 1950 ecological variables on the total and the two age-specific migration rates for 1950-1960 and the effects of the 1960 variables on 1960-1970 migration rates were obtained

for the total nonmetropolitan county groups for 1950 and 1960 and for each rate within each of the 1950 and 1960 ecosystem types. Stepwise procedures with forward selection were utilized because of a desire to eliminate relatively small relationships from the analysis and in order to more clearly examine variations across ecosystem types and time periods. This analysis thus allows one to examine differences in total and age-specific patterns, as well as variations in such patterns in different ecosystems at different time periods.

Analysis

Ecosystem Delineation

The results of the variable selection process can be ascertained by comparing the variable list in Table 1 with that in Table 2. As this comparison reveals many of the indicators, especially of organization, were dropped due to high intercorrelations. The choice of the variable to be retained in a group of highly intercorrelated factors of the same POET concept was admittedly somewhat arbitrary but in general an attempt was made to retain the variable that was most directly and easily interpretable. In comparing the two lists it is apparent that those retained were generally standard demographic,

Table 1 here

technological, environmental, and organizational indicators. The savings per capita and government expenditures per capita are relatively unique in ecological analyses but are standard indicators of levels of economic development and levels of organization.

The results of the factor analysis of patterns in nonmetropolitan counties are shown in Table 2 for 1950 and in Table 3 for 1960. The labels shown for each of the factors are seen as indicating the general types of counties

falling within each category; the N's at the bottom of each table indicate the number of counties that were placed in each category after the factor loadings shown in the tables were used to compute factor scores for each county and each county was placed in the category with its highest factor score, and the percentages of variance explained indicate the percentages of the common variance explained by each factor and by all factors (total variance explained).

The data in Table 2 point to eight factor types, each of which had eigen values greater than 1.00 and which together explained over 75 percent of the variation in the patterns. An examination of these factors reveals several

Table 2 here

quite distinct factor types and several relatively indistinct types. Thus the first factor with high loadings on urbanization, income, technology, and manufacturing and trade seems to indicate a small city or suburban manufacturing and trade centers factor, while the fourth factor with only agriculture having a fairly high industrial loading and with moderate loadings for average size of farm, value of farm products, and percent of the population that is living on farms would appear to be safely classifiable as basic agriculture. Finally, the high loading on mining clearly point to mining counties as the component type for the sixth factor.

On the other hand, several of the other factors are more difficult to charaterize. For example, the second factor has very high loadings on population, density, and services, but also on percent living on farms. Similar problems appear in the interpretation of other factors. In sum, then, several of the factors cannot be clearly delineated from the factor loadings alone.

Similar patterns are evident in Table 3 for 1960. In this table, nine factors with eigen values greater than 1.00 explain over 73 percent of the variation in the patterns. As in the 1950 results, however, the clarity of

the factors varies widely. Again the first, third, and seventh factors are quite clearly interpretable, while other factors are difficult to discern. Of

Table 3 here

special significance in the 1960 results, however, is the appearance of a large relatively indistinct type which we refer to as the rural service center factor. This factor became the dominant pattern for nearly one-third of all the counties in 1960 and, as will be evident below, clearly affected other patterns for 1960. Overall, in 1960, as in 1950, a few clear types can be discerned, but difficult to discern patterns were even more apparent in 1960.

In an attempt to further clarify the ecosystem types within the 1950 and 1960 factor loading patterns, the counties included in each factor type for 1950 and 1960 were examined. Although the list of counties falling into each factor type cannot be shown here, the analyses of the component counties within factor types tended to clarify some factors. The second factor type for 1950 and 1960, for example, contains a large number of counties that contain regional and state teachers colleges. The seventh and eighth factors in 1950 and the eighth and ninth factors in 1960 have relatively large numbers of Indian reservation and livestock dominated economies. This analysis thus further clarified several aspects of several factors.

As a final means of examining factor patterns and factor groupings, as well as changes in these patterns across time, the 1950 factor types were crosstabulated by the 1960 types. These results are reported in Table 4.

Table 4 here

When the data in this table are examined, it is evident that for nearly all 1950 factor types major shifts to the fifth factor in 1960 were evident. Thus to the extent that this fifth type represents a pattern of less differentiation in nonmetropolitan ecosystem types, these data would suggest that rural

ecosystems were less diverse in 1960 than in 1950. When the dominant influence of the fifth factor in the table is taken into account, the patterns evident in the table tend to support a good deal of congruence in types across time. Thus type 1 in 1950 and type 1 in 1960 appear to coincide quite well. Types 2 and 3 in 1950 tended to be part of factor type 2 in 1960. Factor 4 in 1950 and factor 3 in 1960 are similar. Counties in factors 5, 6, and 8 in 1950 tended to fall in factor types 7 and 9 in 1960 and counties in factor 7 in 1950 tended to fall in types 6 and 9 in 1960. In general, then, if the fifth factor is discounted, counties tended to fall in similar types in both periods.

The results of the attempt to delineate ecosystem types show mixed results. On the one hand, the appearance of such distinct types as the small city, high density service, basic agricultural, and mining types in both periods, as well as the general congruence (if the fifth factor in 1960 is discounted) between factors between 1950 and 1960, seem to support the view that ecosystem types are distinguishable in nonmetropolitan areas and that further attempts such as this and that by Frisbie and Poston (1976) should be pursued. On the other hand, the lack of apparent distinct types for several factors and the emergence of a broad relatively indistinct type in 1960 suggest that attempts to delineate nonmetropolitan county types may be problematic and may require different time referents with different variables being used in each period of time. Given the lack of clarity in the results, then, it is evident that additional conceptual and empirical developments are necessary for making more effective ecosystem delineations.

Migration Analyses

The results of the analyses of migration patterns are shown in Tables 5-7. These tables show the standarized regression coefficients, R^2, and F

values for stepwise regressions of ecological variables on the total and age-specific migration rates 1950-1960 and 1960-1970 for the total nonmetropolitan county groups and in each ecosystem subgroup for 1950 and 1960. By comparing values for total migration rates to those for age-specific rates and by comparing values for all the counties to those within ecosystem types, it is possible to distinguish the specificity of ecological effects on migration. In addition, by examining standarized coefficients across ecosystem types it is possible to discern the differential effects of ecological variables within different contexts.

Table 5 presents findings showing the effect of 1950 variables on 1950-1960 migration rates for all counties and within eocsystem types. In this table standarized regression coefficients are shown only for variables selected by the stepwise procedure. Although the order of entrance of variables is not indicated, the order generally was in accordance with the relative size of standarized coefficients.

Table 5 here

An examination of the data in this table provides several interesting findings. First, it is apparent that within the total and the ecosystem types the variable having the greatest effect on total migration patterns also tends to have the greatest effect on the age-specific patterns. Secondly, it is evident that in the total model and in nearly all ecosystem submodels the organizational variables tend to be dominant, with population variables being the next most frequently significant group. Of particular interest is the strong effect of government expenditures per capita on migration patterns in nearly all groups. Thirdly, it is evident that in those factor types that were noted earlier as being difficult to delineate, nonsustenance organizational factors appear to be relatively more prevalent. In particular, it appears that envir-

onmental factors appear to be more significant in these groups. This finding clearly coincides with several noted earlier and with the premises of general ecological theory. Thus these areas were earlier noted to be low density grazing areas. As such, industrial organization factors might be expected to be less important than basic environmental factors.

The data in Table 5 for 1950 show the dominant influence of organizational variables, with this dominance being less apparent in the less distinct factor types. They also show relatively constant patterns for variables across factor types and similar patterns for total and age-specific rates.

The patterns for 1960 are shown in Table 6. As in Table 5, the data point to several interesting patterns, especially when compared to those for 1950. When compared to 1950, the data for 1960 show a wider range of signifi-

Table 6 here

cant ecological factors in nearly all ecosystems and a much lower level of influence for organizational variables. In addition, in the ecosystem subtypes, the number of variables having a significant influence on migration patterns tends to be smaller in 1960 than in 1950. In particular, it is interesting to note that in 1960 the environmental and nonindustrial organizational variables are much more likely to be significant than in 1950. These patterns of greater diversity in 1960, as well as the patterns of decreased effects of organizational factors, both suggest that the wider ecological complex conception of ecology may be necessary for explaining demographic patterns in more complex settings.

As a final means of examining the relationship between ecological factors and migration, the data in Table 7 are examined. These show the F values and R^2 values for the total sample and each ecosystem model for 1950-1960 and 1960-1970.

Table 7 here

The data in Table 7 for 1950-1960 point to several general patterns. When the total and age-specific rates are compared across ecosystem types, in nearly all cases the R^2 within ecosystem types are larger than in the all county model. This finding seems to generally support the view that similar ecosystem types produce similar demographic patterns. When total patterns are compared to age-specific patterns within types, however, the results do not indicate strong age-specific effects. Although the explained variance for the age group of 25-29 is often higher than that for the total rate, it is not consistently so and the explained variance for the group 20-29 is often lower than the total rate. These findings, then, do not support the explanation that ecological affects would be age-specific.

Finally, when the absolute levels of explained variance across ecosystem types are compared by types, it is evident that there is considerable variation in the extent to which the ecological factors explain migration patterns. Thus the extent of variation explained in the counties grouped under the sixth and seventh factors is less than half of that explained in the second factor. Overall, the patterns noted in these comparisons show higher percentages of explained variance in the first and most distinctly delineated factors.

The data in the bottom part of the table for 1960-1970 indicate patterns similar to those for 1950-1960. The levels of variation explained within ecosystems are generally higher than in the total pattern, the differences between total and age-specific rates are inconsistant within factor types, and general levels of explained variance vary widely by ecosystem type. When 1960-1970 patterns are compared to those for 1950-1960, the levels of explained variance are not markedly different within similar ecosystem types. Within the rural service center type, however, the levels of explained variance are

quite low. Given the large number of counties in this type, it appears that several different types of migration patterns may be occurring and that the type is too broad to be widely useful for explaining migration patterns.

The data for 1950-1960 and 1960-1970 in Table 7 bear directly on the issues raised in the introduction. In general, they suggest that the age-specific effects of ecological factors are not as strong as was expected. In addition, they indicate that different ecosystem types do have differential migration patterns and that the use of the ecosystem concept does increase one's ability to explain the demographic patterns of migration.

Overall, then, the regression analysis of migration patterns tends to suggest that a much wider range of ecological variables have come to influence migration patterns over time and that the effects of such factors on migration are significant at both points in time. In addition, they suggest that the use of ecosystem subgrouping does increase one's ability to understand migration patterns but that the ecological effects are not age-specific.

Conclusion

The analyses of ecological systems and their effect on migration patterns in nonmetropolitan areas presented in this paper is but the initial stage in a more inclusive and complex research process. The data presented, however, do allow one to make some general observations concerning the effects of ecological factors on migration patterns over time, to assess the relative utility of the various ecological approaches and to suggest areas where further methodological and conceptual refinement is necessary in ecological analysis of demographic phenomena.

The data presented above provide several patterns of significance to the student of migration. Thus it is clear that the variables introduced here do explain large percentages of the variation in both total and age-specific mi-

gration patterns. Levels of explained variation, especially within ecosystem types, exceed those for similar ecological analysis of such phenomena (Sly and Tayman, 1977; Frisbie and Poston, 1975).

In addition, although the data do not indicate significantly greater predictive power for ecological variables in predicting age-specific migration rates, they do show the nature of the relationships to be quite different for age-specific and total rates. In general, variables with direct relationships to total rates show inverse relationships to age-specific rates. Thus, although increased levels of employment in manufacturing may be associated with increased inmigration and mining with increased outmigration in the total model, the opposite relationships often prevail in the age-specific models. As a result, even though the utility of ecological variables for predicting age-specific rates is not necessarily greater, the data do suggest that total and age-specific migration patterns are differentially related to ecological variables and hence may require quite different forms of analysis. The meaning of these differences should clearly be analyzed further.

The data also indicate that the variables provide better explanations of 1950-1960 migration patterns than of 1960-1970 patterns and that the importance of indicators of economic organization decreased, but the importance of environmental factors increased in the explanation of 1960-1970 patterns. These findings largely substantiate the general trends in migration patterns that have been noted in recent decades. The often noted decrease in the importance of economic organizational factors and the increase in the relative importance of environmental factors are supported in the present findings. In particular, it is interesting to note that in the 1960-1970 patterns the traditional relationships between many characteristics of rural and urban environments and migration were no longer evident. For example, in several regression models the percent of populations living on farms was positively related

to the total migration rate and the percent urban was negatively related to migration. These findings, then, further substantiate that not only have environmental factors become more important in determining migration patterns, but many rural environments are no longer associated with high levels of out-migration.

For the analysis of migration, then, these data suggest the general utility of ecological analyses, the very different relationships between ecological factors and age-specific and total migration rates, and the need to include a wider range of ecological variables in analyses of recent migration patterns. The data, then, clearly point to the utility of continuing ecological examinations of migration patterns.

The data also allow one to address both conceptual and methodological issues related to human ecology and its use in the analysis of demographic factors. Thus, methodologically, it is evident that all stages of the process of both ecosystem delineation and the analysis of the effects of these systems on migration patterns must be refined. Both conceptual and empirical refinements of POET concepts are necessary. Additional indicators of technology, especially agricultural technology, should be added and differences between environmental and organizational indicators clarified. The factor patterns should be further refined and the effects of the use of alternative and closely related variables, such as median years of education on factor patterns, should be investigated. Alternative forms for the determination of factor scores for counties should be investigated. In particular, the determination of factor scores through the use of variables with factor loadings that exceed a selected value should be examined. Further analysis of counties within types should also be completed. Alternative age-specific rates should be examined and alternative analytical techniques utilitzed. In sum, the analysis is far from

complete.

Even at this stage, however, the results allow tentative conclusions to be drawn concerning the general issues raised in the introduction. In regard to the relative utility of the ecological complex and sustenance maintenance conceptions of ecology, it is evident that their levels of utility may be largely a function of the time frame examined. Thus in the data for 1950, the sustenance maintenance organization dimensions are clearly dominant, while in the 1960 data other nonsustenance dimensions are equally significant. In addition, it may be that the two conceptions, though theoretically distinct, have been operationally blurred. Thus analysis of recent efforts (Sly, 1972; Frisbie and Poston, 1976) indicate similar indicators being used to represent different ecological factors. For example, if variables such as government expenditures and income are seen as being sustenance related simply because they are money related, then the differences between the two conceptions may be inextricably confounded. If the original distinction between the two conceptions is maintained, however, (Gibbs and Martin, 1959) the results would appear to point to the need to maintain the wider ecological complex conception for examining recent demographic patterns.

The results fail to provide much support for the view that ecological factors operate differentially in different population subgroups. Thus the percent of variation explained for age-specific groups was not significantly greater than that for the total rate. Although the use of alternative age-specific rates or the use of the actual number of migrants might lead to greater support, the findings do not appear to support the view that ecological factors may have greater utility in examining age-specific rates.

Concerning the use of ecosystem delineations, the results of the analysis indicate that such an approach may be valuable. Thus the significantly great-

er percent of variation explained in the ecosystems than in the total nonmetropolitan population migration rates and the variations in the types of variables that were significant in different ecosystems tend to support the utility of delineating ecosystems as a first step in examining ecological patterns. At the same time, however, the analysis points to the difficulty of making delineations that are both empirically distinct and conceptually interpretable. The ecosystem concept thus appears to offer an important but difficult path for further research.

In sum, then, the data in this paper again point to the general utility of the ecological approach for examining the phenomena of migration. Although it is evident that a substantial level of additional conceptional and methodological refinement of the ecological model is essential, it appears that the level of explanation it promises for understanding demographic patterns is equally significant.

FOOTNOTES

[1]Although Sly (1972), among others, argues that population factors are merely abstractions without causitive power, the role of demographic processes as mechanisms for maintaining population balance would appear to suggest that indicators of population be included in the analysis.

[2]Initial data management efforts, including techniques for merging county files from several sources, were developed by William Howard, formerly Assistant Professor of Rural Sociology, Texas Agricultural Experiment Station.

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Table 1: Initial Variables Selected as Indicators of Ecological Complex Ecological Complex Variable

Ecological Complex Variables

Population	Organization	Environment	Technology
Total Population	% of Population in Labor Force	% Nonwhite	% of Households with Refrigerator (1950) or Freezer (1960
Population Less Than 5 years of Age	Average Size of Farms	Land Area	% of Households with Telephones
Population Greater Than 65 years of Age	% of Farms Over 1,000 Acres	Density	
Median Age	Average Value of Farm Products	% Urban	
Number of Families	Average Value of Farms	% Rural Farm	
Average Family Size	Average Value of Crops Sold	Median Income	
	% of Land in Cropland	Number of Farms	
	% of Population Employed	% of Housing Occupied	
	Bank Deposits per Capita	Population Per Unit	
	Savings per Capita	% of Housing Owner Occupied	
	Government Revenue per Capita	Median Years of Education	
	Government Expenditures per Capita		
	Value Added in Manufacuring		
	Value Added per Manufacturing Establishment		
	Manufacturing Employees pes*		
	Wholesale Sales pes		
	Wholesale Employees pes		
	Wholesale Sales pem**		
	Retail Sales pes		
	Retail Employees pes		
	Retail Sales pem		
	Service Sales pes		
	Service Employees pes		
	Services Sales pem		
	Value of Mining Shipments pes		
	Mineral Employees pem		
	Value of Mining Shipments pem		
	Agriculture Product Values per Farm		
	Agriculture Employees per Farm		
	Agriculture Products Value pem		

*pes represents per establishment
**pem represents per employee

Table 2: Variable Loadings by Factor for Nonmetropolitan Counties, 1950

Variable	Small City, Suburban Manufacturing and Trade	Small, High Density Services	Large, Low Density Mining and Man.	Basic Agriculture	Low Density Diversified	Mining	Large, Low Den. Ser.	Small, Low Den. Ser.
Population	0.21	0.97	0.10	-0.04	-0.11	0.13	0.16	-0 11
Median Age	0.61	-0.02	-0.51	0.04	0.01	-0.03	0.08	-0.24
Family Size	-0.52	-0.06	0.42	-0.16	-0.06	0.04	0.06	0.43
% Nonwhite	-0.65	0.19	0.29	0.31	-0.19	-0.54	0.17	0.13
Land Area	0.16	-0.19	0.66	0.07	0.14	0.32	0.38	0.03
Density	0.06	0.83	-0.05	-0.12	-0.30	0.02	-0.09	-0.15
% Urban	0.61	0.35	0.24	0.01	0.06	-0.18	-0.10	-0.07
% Rural Farm	-0.25	0.90	-0.07	0.21	0.07	0.04	0.19	-0.03
Median Income	0.89	-0.11	0.21	0.15	-0.04	0.27	-0.07	0.04
% of Housing Owner Occupied	0.34	-0.25	-0.59	-0.45	0.09	0.33	-0.04	0 20
# of Farms	-0.16	0.89	-0.19	0.23	0.10	0.03	0.15	-0.07
% of Housing Occupied	0.13	0.23	-0.05	0.21	0.01	0.41	-0.88	-0.07
Population Per Unit	-0.41	0.23	0.25	-0.01	-0.02	0.28	-0.59	0.19
% Having Refrigerators	0.89	0.07	-0.22	0.04	0.11	0.15	-0.21	0.03
% Having Telephones	0.90	0.08	-0.18	0.13	0.02	-0.00	-0.05	0.10
% Farm Over 1000 Acres	0.11	-0.56	0.65	0.26	0.01	0.28	0.04	-0.08
Average Size of Farms	-0.01	-0.28	0.76	0.16	-0.02	0.42	0.14	-0.20
Average Value of Farm Products	0.47	0.35	-0.10	0.44	0.32	0.06	0.10	0.18
% of Population Employed	0.43	-0.04	-0.05	0.84	-0.50	-0.02	-0.11	-0.08
% of Farm Products From Crops	0.24	0.04	0.13	0.40	0.23	-0.62	-0.07	0.17
Value Added	0.19	0.56	0.03	0.09	-0.66	0.06	-0.05	0.13
% of Labor Force Employed	0.12	-0.07	0.19	0.95	-0.58	-0.02	-0.12	0.01
Savings per Capita	0.42	0.17	-0.15	-0.04	-0.32	0.03	0.40	0.50
Government Expenditures Per Capita	0.50	-0.29	0.18	0.15	-0.05	-0.07	0.48	0.30
% Employed Retail	0.79	-0.08	0.21	-0.16	0.41	-0.29	0.17	0.01
% Employed Wholesale	0.62	-0.04	0.07	0.12	0.39	-0.39	-0.06	0.14
% Employed Manufacturing	0.51	0.16	0.29	-0.06	0.31	-0.44	-0.03	-0.15
% Employed in Services	0.14	0.47	-0.04	-0.06	-0.84	-0.06	0.08	0.30
% Employed Mining	-0.07	0.23	0.43	-0.53	0.16	0.62	-0.07	-0.76
% Employed Agriculture	-0.45	-0.44	-0.28	0.35	0.35	-0.09	-0.07	0.14
N =	354	279	280	348	241	379	307	297
% of Common Variance Explained	22.50	16.60	8.90	8.20	6.40	5.30	4.70	3.40
% of Total Variance Explained	75.90							

Table 3: Variable Loadings by Factor for Nonmetropolitan Counties, 1960

Variable	Small City, Suburban Manufacturing-Trade	Small, High Density Services	Basic Agriculture	Large, Low Density Agriculture-Trade	Rural Service Centers	Services-Manufacturing	Mining	Large, Low Density Man. Ser.	Large, Diversified
Population	0.29	0.86	0.28	0.22	0.01	0.06	0.17	-0.00	0.31
Median Age	0.24	-0.23	0.38	-0.48	-0.08	-0.16	-0.03	0.15	0.15
Family Size	-0.38	0.19	-0.36	0.34	-0.04	0.25	0.00	0.04	-0.14
% Nonwhite	-0.81	0.10	-0.05	0.23	0.05	0.15	-0.40	-0.08	0.06
Land Area	0.17	-0.13	-0.46	0.49	0.04	0.14	0.11	0.33	0.63
Density	0.17	0.83	0.28	-0.08	0.13	-0.03	-0.01	-0.11	-0.01
% Urban	0.53	0.55	-0.02	0.33	-0.29	-0.27	-0.09	-0.04	-0.03
% Rural Farm	-0.50	-0.63	0.46	0.16	0.06	-0.00	-0.06	0.05	0.03
Median Income	0.99	0.14	-0.12	0.32	0.15	0.11	0.02	-0.10	-0.08
% of Housing Owner Occupied	0.43	-0.27	0.18	-0.70	-0.05	0.13	0.36	0.41	-0.37
# of Farms	-0.18	0.41	0.72	0.26	-0.04	0.00	0.20	0.11	0.39
% of Housing Occupied	-0.10	0.34	0.28	0.35	0.06	-0.62	0.08	0.18	-0.13
Population Per Unit	-0.38	0.39	-0.02	0.39	0.07	-0.26	0.09	0.10	-0.18
% Having Refrigerators	0.28	-0.67	0.18	0.32	0.12	0.22	0.00	0.04	-0.35
% Having Telephones	0.94	-0.05	0.32	0.14	-0.09	0.04	0.04	-0.04	-0.32
% Farm Over 1000 Acres	0.22	-0.46	-0.55	0.51	0.13	-0.10	-0.08	0.04	0.21
Average Size of Farms	-0.05	-0.10	-0.52	0.45	0.22	-0.14	-0.03	0.23	0.79
Average Value of Farm Products	0.21	0.14	0.53	0.69	-0.16	0.08	0.16	-0.15	0.34
% of Population Employed	0.43	-0.09	0.35	0.29	0.27	-0.06	-0.52	0.02	0.16
% of Farm Products From Crops	-0.25	0.09	0.18	0.51	-0.24	0.03	0.17	-0.77	-0.15
Value Added	0.28	0.66	0.19	0.01	0.57	0.01	-0.19	-0.04	0.11
% of Labor Force Employed	-0.01	-0.25	0.36	0.41	0.06	-0.35	-0.49	0.08	0.02
Savings per Capita	0.60	0.06	0.17	-0.03	0.00	0.47	0.05	0.12	-0.20
Government Expenditures Per Capita	0.65	-0.34	-0.13	0.32	0.10	0.35	0.04	-0.29	0.00
% Employed Retail	0.60	0.00	-0.33	0.08	-0.71	0.00	-0.05	0.19	-0.20
% Employed Wholesale	0.51	0.03	0.06	0.30	-0.76	-0.05	-0.08	-0.20	-0.55
% Employed Manufacturing	0.40	0.07	-0.43	0.05	-0.45	0.20	-0.19	0.22	0.10
% Employed in Services	0.11	0.76	0.13	-0.42	0.57	0.25	-0.29	0.21	0.01
% Employed Mining	0.20	0.04	-0.53	0.02	0.16	-0.45	0.69	-0.29	0.17
% Employed Agriculture	-0.56	-0.71	0.39	0.30	-0.19	0.02	-0.12	-0.09	-0.00
N =	144	240	278	155	774	142	340	130	282
% of Common Variance Explained	18.70	15.90	11.70	8.80	6.00	4.60	4.50	3.60	3.50
% of Total Variance Explained		73.70							

Table 4: Nonmetropolitan County Factors in 1950 by 1960 Factor Types

1950 Factor Types	1960 Factor Types (In Percent)									
	1	2	3	4	5	6	7	8	9	N
1	29.4	7.1	8.2	2.8	33.1	4.2	2.5	2.8	9.9	354
2	0.4	40.9	9.0	6.5	16.9	3.2	13.3	5.4	4.7	279
3	4.6	25.7	0.0	13.2	31.4	1.1	8.9	7.1	7.9	280
4	2.0	2.3	29.9	11.5	40.2	1.4	4.3	2.9	5.5	348
5	2.5	2.1	17.4	6.6	10.4	1.7	27.4	4.6	27.4	241
6	1.3	0.0	14.3	1.3	45.1	1.3	22.2	7.9	6.6	379
7	2.3	0.0	4.6	0.3	21.8	28.3	7.5	2.0	33.2	307
8	0.3	5.4	3.4	9.4	40.1	4.7	27.3	9.4	0.0	297

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Table 5: Standardized Regression Coefficients For Regression of Ecological Variables on the Total Net Migration Rate and Net Migration of Those 25-29 and 20-29 for 1950-1960

Variable	All Counties (N = 2457)			Suburban Manufacturing and Trade (N = 353)			Small, High Density Services (N = 278)			Large, Low Density Mining-Manufacturing (N = 279)			Basic Agriculture (N = 347)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
Population	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.32	-----	-----	-----
Median Age	-0.12	0.15	0.73	-----	-----	0.94	0.25	-----	-----	0.21	-0.41	-----	-----	-----	-0.16
Family Size	0.19	-0.17	-0.16	-----	-----	-1.99	-----	-0.20	-0.38	0.24	-----	-----	-----	-----	-----
% Nonwhite	0.11	-----	-----	0.63	-0.51	-0.27	-0.13	0.10	0.13	0.16	-0.13	-----	0.13	-----	-----
Land Area	-----	-0.06	-0.06	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.42	0.45	0.32
Density	0.07	-0.08	-0.07	-----	-0.74	-0.08	-----	0.28	-0.05	-----	-----	-----	0.22	-0.23	-0.26
% Urban	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% Rural Farm	-----	-0.17	-0.18	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Median Income	-----	-0.04	-----	-0.23	-----	-----	-----	-0.12	-----	-----	-----	-----	0.17	-0.25	-----
% of Housing Owner Occupied	0.17	-----	-----	-----	-----	-----	-----	-----	-----	0.19	-----	-----	-----	-----	-----
# of Farms	-----	0.21	0.22	-----	-----	-----	-----	-----	-----	-----	-----	0.34	-----	-----	-----
% of Housing Occupied	-----	-----	-----	-----	-----	-----	-0.32	-----	-----	-----	-----	0.23	-----	-----	-----
Population Per Unit	-----	-----	-----	-----	-----	-----	0.44	-----	-----	-----	-----	-0.26	-----	-----	-----
% Having Refrigerators	-----	-----	-----	-----	-----	0.20	-----	-----	-----	-----	0.33	-----	-----	-----	-----
% Having Telephones	-----	-----	-0.04	0.11	-0.13	-0.16	0.19	-0.13	-0.18	0.34	-0.20	-0.35	-----	-----	-----
% Farm Over 1000 Acres	-0.12	-----	0.06	-----	-----	-----	-----	-----	-----	-0.15	-----	-----	-0.17	0.11	0.09
Average Size of Farms	0.08	-0.04	-0.06	-----	-----	-----	-3.93	-----	-----	0.08	-0.05	-----	0.88	-1.06	-0.78
Average Value of Farm Products	-----	-----	-----	-----	-----	-----	-----	-0.09	-----	0.17	-----	-----	-----	-----	-----
% of Population Employed	0.84	-0.64	-1.85	0.22	-----	-----	0.07	-----	-----	-----	-----	-----	0.67	-----	-0.11
% of Farm Products From Crops	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Value Added	-0.05	0.03	0.04	-----	-----	0.06	-0.04	-----	-----	-----	-----	-----	-----	-----	-----
% of Labor Force Employed	-0.70	0.44	1.67	-----	-0.37	1.74	-----	-----	0.08	-----	-----	-----	-0.52	-----	-----
Savings per Capita	-0.13	0.15	-----	-----	-----	-----	-----	-----	-----	-0.34	0.49	0.30	-----	-----	-----
Government Expenditures Per Capita	0.45	-0.46	-0.35	0.47	-0.49	-0.41	0.28	-0.30	-0.27	0.56	-0.60	-0.47	0.28	-0.32	-0.21
% Employed Retail	0.15	-0.11	-0.13	-----	-----	-----	-----	0.21	-----	0.23	-0.22	-0.20	-0.32	0.27	0.23
% Employed Wholesale	0.03	-----	-----	-----	-----	-----	-----	-0.09	-----	-----	-----	-----	0.39	-0.25	-0.19
% Employed Manufacturing	0.06	-0.11	-0.10	-0.11	-----	0.05	0.12	-0.16	-0.20	-----	-0.12	-0.08	0.27	-0.19	-0.21
% Employed in Services	0.12	-0.14	-0.09	-0.33	0.20	0.20	-----	-----	-----	0.19	-0.12	-----	0.21	-0.19	-0.14
% Employed Mining	-0.06	-----	0.07	-0.31	0.19	0.22	-0.21	0.18	0.21	-----	-----	0.12	-----	-----	-----
% Employed Agriculture	-0.10	0.10	0.07	-0.89	0.67	0.58	-0.17	0.25	0.15	-----	0.11	-----	-0.15	0.16	0.15

Page 2: Table 5, cont.

Variable	Low Density Diversified (N = 240)			Mining (N = 376)			Large, Low Density Services (N = 281)			Small, Low Density Services (N = 296)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
Population	-----	-0.41	-0.45	-0.34	-----	-----	-----	-0.38	-----	0.66	-----	-0.86
Median Age	-0.27	-----	0.24	-----	-----	-----	0.52	-----	-----	-----	-----	0.63
Family Size	-----	-----	-----	0.30	-0.16	-0.13	0.26	-----	-----	-----	-0.13	-0.13
% Nonwhite	-----	-----	-----	0.32	-0.29	-0.23	-----	-----	-----	0.13	-0.09	-0.11
Land Area	0.15	-----	-----	0.10	-0.12	-0.11	-----	-0.18	-----	-----	-----	0.13
Density	0.57	-0.53	-0.59	0.80	-0.73	-0.67	-----	-----	-----	-----	-0.22	-----
% Urban	-----	0.09	-----	-----	-----	0.05	-----	-----	-----	-----	-----	0.14
% Rural Farm	-0.08	0.37	0.79	-----	-----	-----	1.27	-----	-----	-0.32	-----	0.42
Median Income	-0.13	-----	-----	-0.11	-----	-----	-----	-----	-----	-----	-0.20	-0.28
% of Housing Owner Occupied	0.17	-----	-----	0.21	-----	-----	-----	-----	-----	-----	-----	-----
# of Farms	-----	-----	-0.34	-----	0.22	0.18	-1.43	0.48	0.18	-----	-----	-----
% of Housing Occupied	-----	-----	-----	0.58	-0.29	-0.23	0.20	-----	-----	-----	-----	-----
Population Per Unit	-----	-0.30	-0.30	-0.36	0.11	-----	-----	-----	-----	-----	-----	-----
% Having Refrigerators	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.12	-----	-----
% Having Telephones	-----	-----	-0.13	-----	-----	-----	-----	-0.14	-----	-----	-----	0.17
% Farm Over 1000 Acres	-----	-----	-----	-----	-0.09	-0.08	-0.27	0.13	-----	-----	-----	-----
Average Size of Farms	-----	-1.03	-1.19	-----	-----	-----	-----	-----	-----	-----	-0.48	-----
Average Value of Farm Products	-----	-----	-----	----	----	-----	-----	-----	-----	-----	-----	-----
% of Population Employed	0.97	-0.22	-0.08	0.14	-----	-0.14	-----	-0.55	-0.32	0.41	-----	-1.32
% of Farm Products From Crops	-0.78	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Value Added	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% of Labor Force Employed	-----	-----	-----	-----	-0.18	-----	-----	-----	0.13	-0.49	0.21	1.39
Savings per Capita	-----	-----	-0.27	-0.13	0.10	0.08	-0.19	0.24	-----	-----	-----	-----
Government Expenditures Per Capita	0.55	-0.42	-0.21	0.41	-0.30	-0.22	0.45	-0.47	-0.29	-----	-0.29	-0.19
% Employed Retail	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.12
% Employed Wholesale	-----	-----	-----	-----	-----	-----	-----	0.33	-----	-----	-----	-----
% Employed Manufacturing	0.24	-0.19	-0.24	-----	-----	-----	0.83	-0.38	-0.52	0.22	-0.31	-0.34
% Employed in Services	-----	-----	-----	0.33	-0.25	-0.24	-----	-----	-----	0.07	-0.17	-----
% Employed Mining	-----	-----	0.16	-0.08	0.11	0.10	-----	-----	-----	-----	0.16	0.19
% Employed Agriculture	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Table 6: Standarized Regression Coefficients For Regression of Ecological Variables on the Total Net Migration Rate and Net Migration of Those 25-29 and 20-29 for 1960-1970

Variable	All Counties (N = 2457)			Suburban Manufacturing-Trade (N = 143)			Small, High Density Services (N = 239)			Basic Agriculture (N = 276)			Large, Low Density Agriculture-Trade (N = 154)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
Population	-0.12	0.08	-----	-----	-----	-----	-0.06	-----	-----	-0.15	-----	-----	-----	-----	-----
Median Age	0.19	-----	0.09	-----	-----	0.63	-0.22	-----	0.51	-----	0.14	-----	-----	-0.36	-----
Family Size	-0.14	-----	-0.08	-----	-----	-0.61	0.13	0.35	-----	-0.20	0.33	-----	-----	-----	-----
% Nonwhite	-----	0.08	0.18	-----	-----	0.75	-0.26	0.17	0.58	-----	-----	-----	-----	-----	0.13
Land Area	0.06	-0.04	-----	-----	-0.31	-0.37	-----	-----	-----	0.38	-----	-----	-----	-----	-----
Density	0.13	-0.15	-0.14	-----	-0.47	-0.45	-----	-----	-0.08	-----	-----	-----	-----	-----	-----
% Urban	-0.04	0.08	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% Rural Farm	-0.40	0.24	0.32	-1.54	0.73	1.04	-0.38	0.42	0.55	-0.41	0.23	0.30	-0.18	0.33	0.40
Median Income	0.12	-0.35	-0.16	-----	-----	0.85	-----	-0.50	-----	0.12	-0.30	-----	-----	-0.42	-0.20
% of Housing Owner Occupied	0.12	0.07	0.14	-----	-----	-----	0.10	0.17	0.26	-----	-----	-----	-----	0.21	0.23
# of Farms	0.12	-0.07	-0.10	0.32	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% of Housing Occupied	-0.28	0.09	0.06	0.42	0.27	-0.47	-----	-----	-0.54	-0.27	0.10	-----	-----	-----	-----
Population Per Unit	0.16	-----	-----	-----	-----	0.95	-----	-0.35	-----	-----	-----	0.34	-----	-0.34	-0.47
% Having Refrigerators	-----	0.06	0.06	-----	-----	-----	0.22	-0.27	-----	-----	-----	0.10	-----	-0.13	-----
% Having Telephones	-0.21	0.21	0.06	-0.54	0.30	-----	-----	0.35	-----	-0.18	0.08	-----	-----	-----	-0.31
% Farm Over 1000 Acres	-0.17	0.07	0.09	-0.41	0.17	0.36	-0.81	-----	-----	1.50	-1.20	-1.03	-0.10	-----	0.26
Average Size of Farms	-----	-----	-----	-----	-----	-----	-----	-0.46	-----	-14.08	10.85	9.10	-0.29	0.22	-----
Average Value of Farm Products	-----	-----	0.05	-----	-----	-----	-----	-----	0.15	-----	-----	-0.06	-----	-----	-----
% of Population Employed	0.10	-0.19	-0.12	-----	-----	-0.64	0.32	-----	-----	0.16	-----	-0.23	0.33	-----	-0.28
% of Farm Products From Crops	-0.10	0.08	0.11	-0.15	-----	-----	-----	-0.10	-----	-0.13	-----	0.06	-0.20	-----	-----
Value Added	-----	-0.07	-----	-----	-----	-----	-0.08	-----	0.11	-----	-----	-----	-----	-0.15	-----
% of Labor Force Employed	0.10	-----	-0.08	-----	-0.33	-----	-----	-0.15	-0.53	-----	-----	-----	0.29	-----	-----
Savings per Capita	-----	0.05	0.05	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.26	-----
Government Expenditures Per Capita	0.05	-0.13	-----	0.21	-0.19	-----	-----	-----	-----	-----	-----	0.17	-----	-----	-----
% Employed Retail	-----	0.08	-----	-0.27	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% Employed Wholesale	-----	-----	0.05	-----	-----	-----	-----	-----	0.13	-----	-----	-----	-----	-----	0.23
% Employed Manufacturing	0.12	-0.13	-0.16	0.31	-0.20	-0.21	-----	-----	-0.30	-----	-----	-----	0.20	-----	-0.19
% Employed in Services	-0.09	0.05	0.10	-----	-----	-----	-----	-----	0.15	-----	-----	-----	-----	-----	-----
% Employed Mining	-0.21	0.15	0.20	-0.20	0.13	-----	-0.24	0.24	0.29	-----	0.34	0.16	-0.21	0.17	0.34
% Employed Agriculture	-----	-----	-----	1.23	-0.32	-0.60	-----	-----	-----	-----	-----	-----	-----	-----	-----

Page 2: Table 6, cont.

Variable	Rural Service Centers (N = 772)			Services-Manufacturing (N = 141)			Mining (N = 339)			Large, Low Density Manufacturing-Services (N = 129)			Large Diversified (N = 256)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
Population	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.19
Median Age	0.12	-----	-----	-----	0.19	0.41	0.28	-----	-----	-----	-----	0.12	-----	0.25	-----
Family Size	-----	-----	-0.18	-0.41	0.39	0.33	-----	0.24	-----	-----	-----	-----	-0.85	0.63	-----
% NonWhite	-----	-----	-----	-----	-----	-----	0.19	-0.12	-----	-0.08	-----	-----	-----	-----	0.21
Land Area	-0.08	-----	-----	-0.15	-----	0.06	-----	-----	-----	-----	-----	-----	0.31	-0.23	-0.09
Density	-----	-0.14	-0.19	-----	-0.18	-0.14	-----	-----	-0.24	-----	-----	-0.30	0.45	-0.51	-0.20
% Urban	-0.07	0.16	-----	-----	-----	-----	-----	-----	-0.15	-----	-----	-0.15	-0.16	0.16	-----
% Rural Farm	-0.20	0.15	0.18	-0.32	0.19	0.27	-0.28	0.10	0.33	-0.42	-----	-----	-0.80	0.58	0.35
Median Income	0.28	-0.54	-0.24	-----	-0.20	-----	-----	-0.51	-----	-----	-----	-0.66	-0.52	-----	-----
% of Housing Owner Occupied	-----	0.11	-----	0.09	-----	-----	0.23	-----	-----	-----	-----	-----	0.37	0.32	-----
# of Farms	-0.13	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% of Housing Occupied	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Population Per Unit	-----	-----	-----	-----	-----	-----	-----	-0.11	-----	-----	-----	-----	-0.22	-----	-----
% Having Refrigerators	-0.07	0.08	0.11	0.13	0.10	0.12	0.09	-----	-0.15	-----	-----	0.20	-----	-----	0.17
% Having Telephones	-0.12	0.17	-----	-----	-----	-0.21	-----	0.23	-----	-----	0.21	-----	-0.62	0.43	0.26
% Farm Over 1000 Acres	-----	-----	-----	-----	-----	-----	-0.26	-----	-----	-0.15	-----	-----	-----	-----	-----
Average Size of Farms	-----	0.25	0.20	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Average Value of Farm Products	-----	-----	-----	-----	-----	-0.13	-----	-----	-----	-----	-----	-----	-----	-----	-----
% of Population Employed	0.18	-0.25	-0.26	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.43	-0.29
% of Farm Products From Crops	-0.14	0.16	0.11	-0.10	-----	0.12	-----	-----	-----	-----	-----	-----	-----	0.13	0.12
Value Added	-----	-0.07	-----	-----	-----	-----	-----	-0.15	-----	-----	-0.15	-----	-----	-----	-----
% of Labor Force Employed	-----	-----	0.09	0.18	-0.16	-0.16	-----	-----	-----	0.30	-0.27	-0.28	-----	-----	-----
Savings per Capita	-----	-----	0.07	-----	-----	-----	-----	-----	-----	-----	0.07	0.11	-----	-----	-----
Government Expenditures Per Capita	-----	-----	-----	-----	-0.12	-0.06	-----	-----	-----	-----	0.28	0.28	0.15	-0.47	-0.21
% Employed Retail	-----	-----	0.12	0.23	-0.11	-0.15	-----	-----	0.14	-----	-----	-----	0.16	-0.09	-----
% Employed Wholesale	-----	0.27	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
% Employed Manufacturing	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-0.09
% Employed in Services	-----	-----	-----	-0.30	0.17	0.17	-----	-----	-----	-----	-----	-----	-----	-----	-----
% Employed Mining	-0.16	-----	-----	-----	-----	-----	-0.14	0.14	0.15	-0.36	-----	-----	-0.43	0.44	0.29
% Employed Agriculture	-----	-----	-----	-0.19	0.21	0.16	-----	-----	-----	-----	0.17	-----	-----	-----	-----

Table 7: Multiple Coefficients of Determination and F Ratios For Regression of 1950 and 1960 Ecological Variables on Total Net Migration and Net Migration of Persons 25-29 and 20-29 for 1950-1960 and 1960-1970

1950-1960

	All Counties (N = 2457)			Small City, Suburban Manufacturing-Trade (N = 353)			Small, High Density Services (N = 278)			Large, Low Density Mining-Manufacturing (N = 279)			Basic Agriculture (N = 347)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
R^2	0.35	0.42	0.35	0.41	0.45	0.49	0.69	0.64	0.57	0.57	0.58	0.55	0.45	0.50	0.44
F Ratio*	71.42	104.55	67.67	27.08	35.41	24.96	49.77	40.07	39.05	29.77	33.78	33.34	19.10	30.56	22.32

	Low Density Diversified (N = 240)			Mining (N = 376)			Large, Low Density Services (N = 281)			Small, Low Density Services (N = 296)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
R^2	0.55	0.58	0.60	0.31	0.41	0.41	0.30	0.39	0.13	0.44	0.44	0.61
F Ratio*	28.39	34.88	25.97	11.36	19.09	19.18	13.09	17.60	7.99	28.12	22.20	29.61

1960-1970

	All Counties (N = 2457)			Small City, Suburban Manufacturing-Trade (N = 143)			Small, High Density Services (N = 239)			Basic Agriculture (N = 276)			Large, Low Density Agriculture-Trade (N = 154)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
R^2	0.32	0.31	0.30	0.49	0.45	0.51	0.45	0.54	0.57	0.50	0.54	0.55	0.41	0.59	0.56
F Ratio*	55.39	49.85	49.48	11.45	9.64	10.55	18.46	22.60	22.83	21.70	34.82	29.31	12.56	20.98	16.53

	Rural Service Centers (N = 772)			Services-Manufacturing (N = 141)			Mining (N = 339)			Large, Low Density Manufacturing-Services (N = 129)			Large Diversified (N = 256)		
	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29	Total	25-29	20-29
R^2	0.30	0.27	0.29	0.53	0.58	0.58	0.23	0.30	0.12	0.28	0.53	0.45	0.46	0.55	0.51
F Ratio*	27.05	23.09	27.78	14.76	16.65	12.63	14.45	17.45	7.47	9.62	19.44	10.86	19.23	25.02	21.09

*All significant at .001 level